



# Sumavision

## General Introduction

The 10K502D is a cost-effective, high performance Digital QAM Modulator provided by Sumavision. It innovatively integrates 2 independent Digital QAM Modules in a single 1RU chassis, allowing service providers expanding more video services without sacrificing head-end real estate. Besides, it supports various input interfaces (ASI/DS3/E3) and can be flexibly configured into different systems.



## 10K502D QAM Modulator

## Business Benefits

### High Performance

Innovatively apply Digital Pre-correction technique in cable network; Excellent MER, Out-of-band Rejection, CNR, PCR correction, etc

### Strong Background Processing

Support edition of all PSI / SI tables; PID filtering and remapping; Software upgrade

### Cost Effective

Realize two QAM modules in 1RU chassis; Support DS3 / E3 inputs, without additional adapters; Support internal re-multiplexing

### Flexibility

Compact 1RU structure, flexible in building up the system

## Features

### Up to 2 Digital QAM Modules in 1RU chassis

- Independent two QAM Modules, the on/off of one module does not affect the other one
- 2 ASI inputs, 2 DS3 / E3 inputs, 2 independent RF outputs, 2 RF test-point outputs, 2 ASI loop-through, 2 DS3 / E3 loop-through, 2 ASI outputs (optional)

### Flexible Configuration

- Service Providers can configure the 10K502D in different ways with different software options
- ASI input 1 → RF output 1, ASI input 2 → RF output 2
  - ASI input 1 + ASI input 2 → RF output 1 or 2
  - DS3/E3 input 1 → RF output 1, DS3/E3 input 2 → RF output 2
  - ASI input 1 + DS3 / E3 input 1 → RF output 1, ASI input 2 + DS3 / E3 input 2 → RF output 2
  - For the above four cases, RF1 and RF2 can be independent frequencies; Programs can be chosen freely during the multiplexing (" + ")

### QAM with upconverter

- ITU-T J.83, Annex A(DVB), B(OpenCable) and C(Japan)
- Full frequency agile 52 ~ 866 MHz
- 16, 32, 64, 128, 256, 512 and 1024 QAM
- Variable data rates, bandwidths and constellations

### Monitoring and Management

- ASI monitoring, for ASI / SDH input, or the modulated TS
- Detailed bit rate measurement
- PSI / SI viewers embedded
- Real-time remote control and diagnostics with SNMP management system



## INPUTS

### ASI

- 2 x ASI
- Type: Asynchronous Serial Interface, EN 50083-9
- Connector: BNC, 75Ω
- Packet Format: Auto detection 188 / 204 byte packets
- Bit Rate: 1 ~ 216 Mbit/s
- Syntax: SPTS / MPTS, ISO / IEC 13818

### SDH

- 2 x DS3 / E3
- Type: 44.736M DS3, 34.368M E3
- Connector: BNC, 75Ω
- Syntax: SPTS / MPTS

## QAM-RF

- 2 x RF outputs(independent frequencies) + 2 x RF test-point
- Connector: F-type, 75Ω
- Frequency Range: 52 ~ 866 MHz
- Tuning Step: 12.5 KHz
- Return Loss: ≥ 15 dB
- Channel Bandwidth: 8 MHz (ITU-A), 6 MHz (ITU-B&C)
- Output Level: 95 ~ 120 dBuV RMS, step size 0.5 dB
- Channel Encoding: Randomisation, RS, Trellis and Interleaving according to ITU-T Annex A, B or C
- QAM Constellations: All constellations up to 1024 QAM
- Symbol Rate: 1 ~ 7 Mbaud (ITU-A) or 1 ~ 5.5 Mbaud (ITU-B&C)
- MER (after equalizer): ≥ 41 dB @ RF
- MER (before equalizer): ≥ 34 dB @ RF
- BER: ≤ 1.0 x 10<sup>-9</sup> (pre FEC @ 256 QAM)
- SNR: ≥ 50 dB in band
- Phase Noise: ≤ -95 dBc/Hz @10 KHz

## RF TEST POINT

- Connector: F-type, 75Ω
- Return Loss: ≥ 15 dB
- RF Level: -20 dBc ± 0.5 dB

## PROCESSING

- PID filtering and remapping
- PSI / SI extraction, generation and insertion
- PSI / SI transparent transmission
- PSI / SI viewers embedded
- PCR de-jittering and restamping
- Detailed bit rate measurement

## OUTPUTS

### ASI

- 2 x ASI loop through
- 2 x ASI outputs (for monitoring, optional)
- Type: Asynchronous Serial Interface, EN 50083-9
- Monitor: ASI input, SDH input, or modulated TS
- Connector: BNC, 75Ω
- Bit Rate: 1 ~ 216 Mbit/s
- Syntax: SPTS / MPTS

### SDH

- 2 x DS3 / E3 loop through
- Type: 44.736M DS3, 34.368M E3
- Connector: BNC, 75Ω
- Syntax: SPTS / MPTS

## CONTROL AND MANAGEMENT

- 6 button keys LCD panel
- TCP / IP for remote control
- 10 / 100M Base-T Ethernet interface for SNMP management
- Real-time remote control and diagnostics with SNMP management

## PHYSICAL AND POWER

### DIMENSIONS (H x W x D)

- 1RU (19" rack)
- 4.4cm x 48.3cm x 35.2cm (1.75" x 19" x 14")

### POWER INPUT

- Voltage 80 ~ 150 V or 180 ~ 250 V
- -48 V DC (optional)

### CONSUMPTION

- 50 W MAX

### APPROX WEIGHT

- 4.5kg / 9Lbs

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